PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
SEA/3077PCT		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US 02/ 35820	07/11/2002	08/11/2001
Applicant		
SEAGATE TECHNOLOGY, LLC		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [ ] the text is approved as submitted by the applicant.

   [X] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 4

   [ ] as suggested by the applicant.

   [ ] because the applicant failed to suggest a figure.

   [X] because this figure better characterizes the invention.

   [ ] None of the figures.

B x III TEXT OF THE ABSTRACT (Continuation of it m 5 of th first sheet)

In one aspect of the invention, the gap defined between the electrode and the workpiece is automatically adjusted in response to the pressure of the inflow of the electrolyte. Apparatus for ECM grooving of a workpiece is provided comprising a weighted or biased electrode(416) which is mounted to automatically adjust the gap(420) between the electrode and the workpiece(400) in response to the pressure of the electrolyte inflow, with current flow rate being held constant.The female portion of a dual cone or single cone work piece is supported on a frame or platen, with the cone opening facing an axis which we shall designate the Z-axis. A slide electrode assembly(416) is provided, preferably working along an axis which coincides with the central axis for the conical workpiece. The electrode assembly comprises a static element which supports the dynamic elements of the electrode assembly, and a dynamic element which comprises a electrode weighted or biased by a known mass and movable along the Z-axis. The electrode includes, on a face(418) which will be aligned across a machining gap(420) from the workpiece(428) a pattern of grooves which are to be defined on the workpiece; the pattern comprises conductive elements so that the necessary current flow between the workpiece and the electrode can be established. As the electrolyte is pumped into or through the machining gap between the workpiece and the dynamic electrode at a constant static pressure, the dynamic electrode reacts to the pressure by moving toward or away from the workpiece to establish the a certain gap width to create the necessary groove depth and definition. The force acting on the electrode slide assembly(416) is the primary controlling factor for establishing the machining gap as the electrode and dynamic support move in response to the constant static pressure of pumped electrolyte.

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International Application No
PCT/US 02/35820

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B23H9/00 B23H3/10 B23H7/18 B23H3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B23H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3 637 481 A (WILLIAMS LYNN A) 25 January 1972 (1972-01-25)	1,3,4,6, 7,9, 11-16
A	column 2, line 14 - line 33 column 3, line 15 - line 29 abstract; figures	2,5,8, 17-20

X	PATENT ABSTRACTS OF JAPAN vol. 010, no. 066 (M-461), 15 March 1986 (1986-03-15) -& JP 60 211118 A (TOSHIBA KK), 23 October 1985 (1985-10-23)	10
Y		1,3,4,6, 7,9, 11-16
A	abstract	2,5,8, 17-20

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 March 2003	14/03/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Haegeman, M

Form PCT/ISA/210 (second sheet) (July 1992)

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	WO 01 30526 A (ULTRA SYSTEMS LTD ;TCHUGUNOV BORIS (RU)) 3 May 2001 (2001-05-03) abstract; figures	1-20

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 02/35820

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3637481 A	25-01-1972	DE 1948731 A1	17-09-1970
		FR 2024778 A6	04-09-1970
		GB 1237324 A	30-06-1971
JP 60211118 A	23-10-1985	NONE	
WO 0130526 A	03-05-2001	AU 1037001 A	08-05-2001
		EP 1244533 A1	02-10-2002
		WO 0130526 A1	03-05-2001
		GB 2372007 A	14-08-2002